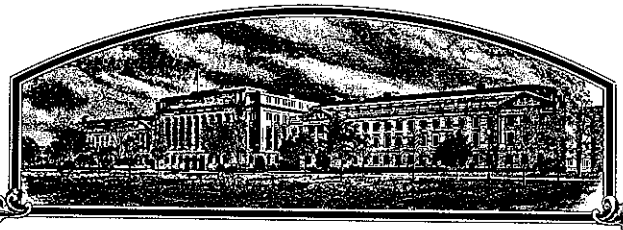
No. 8400026



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT '2165'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 31st *day of* January *in the year of our Lord one thousand nine hundred and* eighty-six.

Attest:

Kenneth W. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Acting *Secretary of Agriculture*

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

FORM APPROVED: OMB NO.0581-0055

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION	3. VARIETY NAME
Pioneer Hi-Bred International, Inc. Plant Breeding Division Dept. of Cereal Seed Breeding	W7452B	2165

4. ADDRESS *(Street and No. or R.F.D. No., City, State, and Zip Code)*	5. PHONE *(Include area code)*	FOR OFFICIAL USE ONLY PVPO NUMBER
Rt. 2 Hutchinson, Kansas 67501	(316) 662-5439	8400026

6. GENUS AND SPECIES NAME	7. FAMILY NAME *(Botanical)*	FILING: DATE / TIME
Triticum aestivum	gramineae	12/23/83 2:30 ☐ A.M. ☒ P.M.

8. KIND NAME	9. DATE OF DETERMINATION	FEES RECEIVED: AMOUNT FOR FILING / DATE
Wheat	September 1, 1981	$ 1,000 12/23/83

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*	FEES RECEIVED: AMOUNT FOR CERTIFICATE / DATE
Corporation	$ DATE

11. IF INCORPORATED, GIVE STATE OF INCORPORATION	12. DATE OF INCORPORATION
Iowa	May, 1926

13. NAME AND ADDRESS OF APPLICANT REPRESENATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

Dr. Charles Hayward
Pioneer Hi-Bred International, Inc.
Rt. 2
Hutchinson, Kansas 67501

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

a. ☒ Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*

b. ☒ Exhibit B, Novelty Statement

c. ☒ Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*

d. ☒ Exhibit D, Additional Description of the Variety

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)* ☐ Yes *(If "Yes," answer items 16 and 17 below)* ☒ No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ Yes ☐ No	☐ Foundation ☐ Registered ☐ Certified

18. DID THE APPLICANT(S) FILE FOR PROTECTION OF THE VARIETY IN THE U.S. OR OTHER COUNTRIES?

☐ Yes *(If "Yes," give names of countries and dates)*

☒ No

19. HAVE RIGHTS BEEN GRANTED IN THE U.S. OR OTHER COUNTRIES?

☐ Yes *(If "Yes," give names of countries and dates)*

☒ No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT	DATE
Pioneer Hi-Bred International, Inc. by Charles F. Hayward	December 8, 1983
SIGNATURE OF APPLICANT	DATE

14A. Exhibit A, Origin and Breeding History of the Variety

2165, *Triticum aestivum* L. em Thell, a hard red winter wheat, was developed by Pioneer Hi-Bred International, Inc. from a cross of Sturdy*2/4/Etoile de Choisy//Thorne/Clarkan/CI13390. A semidwarf mutant was selected from the Etoile de Choisy//Thorne/Clarkan cross. This mutant was crossed to CI13390. A pure line selection from this cross was crossed to Sturdy. This single cross was backcrossed to Sturdy.

The F_1 generation was grown in the greenhouse at Hutchinson in 1972. Single F_2 plants were selected in 1973 and bulked seed of each plant was advanced in the field at Hutchinson in 1974. Approximately 50 heads were taken from the 1974 bulk and planted as individual rows in 1975. Those F_4 rows appearing homogeneous were rebulked and advanced from the F_5 to the F_7 in the field at Hutchinson. Single heads were selected from the F_7 bulk in 1978. The F_7-derived seed from one head was grown in 1979, and the bulked progeny plot from this row was selected in 1980 near Hastings, Nebraska. 2165 has been in yield tests and milling and baking trials since 1981.

2165 has shown uniformity and stability for all traits as described in Exhibit C (Form LPGS-470-6) -- "Objective Description of Variety."

No variants have been observed in 2165.

14B. Exhibit B, Novelty Statement

2165 is an awned semidwarf hard red winter wheat cultivar, most similar to the variety Sturdy in many phenotypic and agronomic traits. 2165 is uniquely different from Sturdy in leaf carriage and in Hessian fly resistance. 2165 has an erect flag leaf at booting, whereas Sturdy has a recurved flag leaf. Also, Sturdy is resistant to no races of Hessian fly while 2165 is resistant to races GP, A, and B.

2165 averaged about 104 cm in height at Hutchinson, Kansas, in 1983, about 7 cm taller than Sturdy but 16 cm shorter than Scout. In Pioneer trials, 2165 has been more winterhardy than Sturdy, but less hardy than Newton.

2165 and Sturdy show resistance to current races of leaf rust (*Puccinia recondita* Rob. ex Desm. f. sp. *tritici*) but little resistance to current races of stem rust (*P. graminis* Pers. f. sp. *tritici* Eriks) in Kansas.

FORM APPROVED: OMB NO. 40-R3822

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Pioneer Hi-Bred International, Inc.

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Plant Breeding Division
Department of Cereal Seed Breeding
Rt. 2
Hutchinson, Kansas 67501

FOR OFFICIAL USE ONLY
PVPO NUMBER 8400026
VARIETY NAME OR TEMPORARY DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:
[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:
[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____ [2] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____

[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
[2][2][9] FIRST FLOWERING [2][3][6] LAST FLOWERING

4. MATURITY (*50% Flowering*):
[0][6] NO. OF DAYS *EARLIER* THAN ..... [2] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS
[ ][ ] NO. OF DAYS *LATER* THAN .....

5. PLANT HEIGHT (*From soil level to top of head*):
[1][0][4] CM. HIGH
[ ][ ] CM. TALLER THAN ..... [ ]
[1][6] CM. SHORTER THAN ..... [2] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (*See reverse*):
[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:
[1] 1 = YELLOW 2 = PURPLE

8. STEM:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[0][4] NO. OF NODES (*Originating from node above ground*)
[1] Waxy bloom: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[2][6] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____
[1] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[1] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[0][9] MM. LEAF WIDTH (*First leaf below flag leaf*)
[2][2] CM. LEAF LENGTH (*First leaf below flag leaf*)

FORM LPGS-470-6 (3-79) (Formerly Form GR-470-6 (2-73), which may be used)

8400026

11. HEAD:

[1] Density: 1 = LAX 2 = DENSE

[4] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) Fusiform

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[2] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify):

[0][9] CM. LENGTH [1][0] MM. WIDTH

12. GLUMES AT MATURITY:

[3] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[2] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[2] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[3] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[5] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify)

[0][7] MM. LENGTH [0][3] MM. WIDTH [3][5] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] STEM RUST (Races) [0] LEAF RUST (Races) [0] STRIPE RUST (Races) [0] LOOSE SMUT

[1] POWDERY MILDEW [0] BUNT [ ] OTHER (Specify)

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY [1] APHID (Bydv.) [0] GREEN BUG [0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) HESSIAN FLY RACES: [2] GP [2] A [2] B [1] C [0] D [0] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Sturdy	Seed size	Triumph 64
Leaf size	Sturdy	Seed shape	Newton
Leaf color	Sturdy	Coleoptile elongation	Eagle
Leaf carriage	Sturdy	Seedling pigmentation	PL145

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

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14D. Exhibit D, Additional Description of the Variety

2165 is a common hard red winter wheat, *Triticum aestivum* L.

Flowering date of 2165 is 6 days earlier than the variety Scout and 4 days earlier than Newton. At Hutchinson, Kansas, when seeded about September 30, average first flowering is about 229 days after emergence. Last flowering averages about 7 days later. It is recognized that environmental factors influence flowering of varieties differently.

2165 has averaged 104 cm in height, about 4 cm shorter than Newton and 16 cm shorter than Scout.

The plant color of 2165 at booting stage is green.

Anther color of 2165 is yellow, similar to Scout and Newton.

Anthocyanin has been absent in the stem of 2165. There is no waxy bloom on the stem. Internodes of 2165 are hollow. At maturity, stems are yellow and very strong. Normally 4 stem nodes are present above ground. Internode length between flag leaf and leaf below is about 26 cm.

Auricles of 2165 are glabrous and lacking in anthocyanin.

Flag leaves are generally erect at booting and tend not to be twisted. Hairs have not been observed on the first leaf sheath. There is no waxy bloom on the last leaf sheath. The first leaf below the flag leaf averages about 9 mm wide and 22 cm long when measured at Hutchinson, Kansas.

Spikes are generally mid-dense to lax, fusiform, awned, and yellow at maturity. Awns are rough and about 6 to 8 cm in length. Spike width and length averages about 10 mm and 9 cm, respectively. However, spike width and length are variable with plant population and level of production.

The glumes of 2165 are long and mid-wide with generally oblique shoulders, and glabrous. Beaks are acuminate and range from 2 to 6 mm long.

When evaluated at Hutchinson, Kansas, coleoptile color is white and seedling anthocyanin is absent.

Kernels are red in color, elliptical to ovate in shape, with rounded cheeks and a shallow crease. The brush is not collared and medium in size. The embryo is medium in size. Kernels average 7 mm long and 3 mm wide and about 35 g per 1000. Phenol reaction is black.

14D. Exhibit D (cont.)

2165 is moderately resistant to soil borne mosaic virus. It is moderately resistant to leaf rust (*Puccinia recondita* Rob. ex Desm. f. sp. *tritici*) and moderately susceptible to stem rust (*P. graminis* Pers. f. sp. *tritici* Eriks) races currently common in Kansas. 2165 has not been tested for specific races of leaf rust or stem rust. 2165 is resistant to GP, A, and B races of Hessian fly and susceptible to race C (*Mayetiola destructor* Say). Reaction to bunt (*Tilletia caries* (DC.) Tul.) is unknown. It is moderately susceptible to powdery mildew (*Erysiphe graminis* f. sp. *tritici* E. Marchal).

2165 has a good yield record when compared with currently grown hard red winter wheats (Table 1). In the presence of *Septoria* spp., 2165 has a pronounced yield advantage over susceptible varieties. Short plant height and superior straw strength give 2165 excellent resistance to lodging.

2165 has very good quality characteristics, especially volume potential, when compared to the average of current standard varieties in the HRW area. It has been tested by the Pioneer Wheat Quality Laboratory for several years. Table 2 gives values for 2165, Newton, Centurk 78, Vona, and all checks grown in plots tested in the Great Plains. Each value is an average of seven tests. The figures show that 2165 is better than the checks for flour yield, protein and flour volume, slightly poorer for mixing tolerance, and roughly equivalent for mixing time.

Table 1. Yield comparisons of 2165 with standard varieties tested in 1981-82 and 1982-83. Data represents average of 104 replications.

Variety	Yield (bu/acre)
2165	57
Centurk 78	50
Newton	52
Tam 105	54
Triumph 64	47
Vona	53

Table 2. Milling and baking evaluation of 2165.

Variety	% Flour Yield	% Flour Protein	Mixograph		Microbake (10 g) Loaf Volume (cc)
			Mx Time	Tolerance[1]	
2165	69.7	12.1	3.4	3.9	62.3
Centurk 78	68.6	10.7	3.9	6.6	57.0
Newton	67.0	10.9	3.3	4.1	62.5
Vona	67.8	10.0	3.7	5.6	58.5
All checks	68.6	10.4	3.4	4.8	60.0

[1]Mixograph mixing tolerance--evaluated on a 9-point scale on which 9 = very good, 5 = fair, 1 = very poor

14E. Exhibit E, Statement of the Basis of Applicant's Ownership

Pioneer Hi-Bred International, Inc., Plant Breeding Division, believes it is the sole, original and first breeder of the 2165 variety of hard red winter wheat for which it solicits a certification of protection.